

## Complete Summary

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### GUIDELINE TITLE

Medication administration. In: A.S.P.E.N. enteral nutrition practice recommendations.

### BIBLIOGRAPHIC SOURCE(S)

Bankhead R, Boullata J, Brantley S, Corkins M, Guenter P, Krenitsky J, Lyman B, Metheny NA, Mueller C, Robbins S, Wessel J. Medication administration. In: A.S.P.E.N. enteral nutrition practice recommendations. JPEN J Parenter Enteral Nutr 2009 Mar-Apr;33(2):158-62. [36 references]

### GUIDELINE STATUS

This is the current release of the guideline.

## COMPLETE SUMMARY CONTENT

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## SCOPE

### DISEASE/CONDITION(S)

Conditions or disease states requiring enteral nutrition

### GUIDELINE CATEGORY

Management  
 Treatment

### CLINICAL SPECIALTY

Family Practice  
Gastroenterology  
Geriatrics  
Infectious Diseases  
Internal Medicine  
Nursing  
Nutrition  
Oncology  
Pediatrics  
Pharmacology

## **INTENDED USERS**

Advanced Practice Nurses  
Allied Health Personnel  
Dietitians  
Health Care Providers  
Health Plans  
Hospitals  
Managed Care Organizations  
Nurses  
Pharmacists  
Physician Assistants  
Physicians  
Utilization Management

## **GUIDELINE OBJECTIVE(S)**

- To examine the available literature related to the ordering, preparation, delivery, and monitoring of enteral nutrition
- To establish evidence-based practice guidelines for the safe and effective use of enteral nutrition

## **TARGET POPULATION**

Patients receiving enteral nutrition throughout the lifecycle and throughout all practice settings

## **INTERVENTIONS AND PRACTICES CONSIDERED**

1. Dosage forms and administration
2. Gastric vs. intestinal delivery
3. Drug interactions (for drugs added to enteral nutrition, for multiple drugs)
4. Crushing and diluting medications

## **MAJOR OUTCOMES CONSIDERED**

- Adverse drug event rates
- Incidence of drug-related feeding tube obstruction
- Incidence of other complications attributed to medication
- Incidence of inappropriate drug administration

- Drug interaction rates
- Changes in drug efficacy
- Mortality related to drug-drug interactions

## METHODOLOGY

### METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

PubMed was used to search and collect the literature. Search was limited to English language journals and abstracts were excluded. All types of literature including research, case reports, and review articles. Government, regulatory, and standard setting websites such as the United States (US) Food and Drug Administration (FDA), US Pharmacopeia, and The Joint Commission on Accreditation of Healthcare Organizations were also utilized. Search terms included enteral nutrition, tube feeding, enteral complications, enteral safety, water safety, medication administration, enteral access device, aspiration, misconnections, enteral microbial growth, infant formulas, medical foods, and enteral formulary.

### NUMBER OF SOURCE DOCUMENTS

Not stated

### METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus  
Weighting According to a Rating Scheme (Scheme Not Given)

### RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

### METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

### DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

The literature and evidence were classified based on the Agency for Healthcare Research and Quality (AHRQ) method.

### METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

## **DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) established the Enteral Nutrition Practice Recommendations Task Force to examine the available literature related to the ordering, preparation, delivery, and monitoring of enteral nutrition and to establish evidence-based practice guidelines. It was recognized from the onset that there was either an absence of research or the research was of limited strength to support many aspects surrounding the practice of administering enteral nutrition. Therefore, in addition to the existing literature, a consensus of expert opinion based on current knowledge and best practices was used to formulate these practice recommendations.

The strength of each practice recommendation was graded using a method consistent with the 2002 A.S.P.E.N. Guidelines for the Use of Parenteral and Enteral Nutrition in Adult and Pediatric Patients. The grading system was based on a modified version of the method used by the Agency for Healthcare Research and Quality (AHRQ), United States (US) Department of Health and Human Services. After review of the literature cited, the authors used the AHRQ criteria to classify the strength of the evidence supporting each recommendation statement.

## **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

### **Grade of Recommendation**

- A. There is good research-based evidence to support the guideline (prospective, randomized trials).
- B. There is fair research-based evidence to support the guideline (well-designed studies without randomization).
- C. The guideline is based on expert opinion and editorial consensus.

## **COST ANALYSIS**

Published cost analysis studies were reviewed.

## **METHOD OF GUIDELINE VALIDATION**

Comparison with Guidelines from Other Groups  
External Peer Review  
Internal Peer Review

## **DESCRIPTION OF METHOD OF GUIDELINE VALIDATION**

The draft document was sent to leaders of American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Clinical Practice Sections, Clinical Practice Committee, and Board of Directors for review and comment process.

The draft document was also sent to leaders of related medical organizations. Reviews were received back from the following groups: American Society of Health-System Pharmacists (ASHP), Institute of Safe Medication Practices (ISMP), North American Society for Pediatric Hepatology, Gastroenterology, and Nutrition

(NASPHGAN), American Academy of Pediatrics (AAP), Dietitians in Nutrition Support, a dietetic practice group of the American Dietetics Association, and U.S. Pharmacopeia (USP).

The document was approved by the A.S.P.E.N. Board of Directors following review by internal and external content experts and the A.S.P.E.N. Clinical Practice Committee.

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

Definitions of the grades of recommendations (**A-C**) are provided at the end of the "Major Recommendations" field.

#### Practice Recommendations

1. Do not add medication directly to an enteral feeding formula. **(B)**
2. Avoid mixing together medications intended for administration through an enteral feeding tube given the risks for physical and chemical incompatibilities, tube obstruction, and altered therapeutic drug responses (i.e., do not mix medications together, but do dilute them appropriately prior to administration). **(B)**
3. Each medication should be administered separately through an appropriate access. Liquid dosage forms should be used when available and if appropriate. Only immediate-release solid dosage forms may be substituted. Grind simple compressed tablets to a fine powder and mix with sterile water. Open hard gelatin capsules and mix powder with sterile water. **(B)**
4. Prior to administering medication, stop the feeding and flush the tube with at least 15 mL water. Dilute the solid or liquid medication as appropriate and administer using a clean oral syringe ( $\geq 30$  mL in size). Flush the tube again with at least 15 mL water taking into account patient's volume status. Repeat with the next medication (if appropriate). Flush the tube one final time with at least 15 mL water. Note: Dilution/flush should be less for pediatric doses (minimum 50:50 volume) and at least 5 mL when fluid is not restricted. **(A)**
5. Restart the feeding in a timely manner to avoid compromising nutrition status. Only hold the feeding by 30 minutes or more when separation is indicated to avoid altered drug bioavailability. **(A)**
6. Use only oral/enteral syringes labeled with 'for oral use only' to measure and administer medication through an enteral feeding tube. **(B)**
7. Consult with an adult pharmacist or pediatric pharmacist for patients who receive medications co-administered with enteral nutrition. **(C)**

#### Summary

The complexity of enteral nutrition (EN) feedings cannot be underestimated. All healthcare professionals should be vigilant in continuous surveillance of high risk practices, products and systems as they relate to the enterally fed patient. Recognition of ordering, administration, and monitoring steps of EN delivery which may increase risk of complications to the enterally fed patient is essential.

**Definitions:****Grade of Recommendation**

- A. There is good research-based evidence to support the guideline (prospective, randomized trials).
- B. There is fair research-based evidence to support the guideline (well-designed studies without randomization).
- C. The guideline is based on expert opinion and editorial consensus.

**CLINICAL ALGORITHM(S)**

None provided

**EVIDENCE SUPPORTING THE RECOMMENDATIONS****TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

The type of supporting evidence ranges from prospective randomized trials to expert opinion/consensus.

**BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS****POTENTIAL BENEFITS**

- Standardized processes for enteral nutrition care including ordering, preparation, administration, and monitoring
- Optimal care and minimal risk of error
- Avoidance of tube obstruction, reduced drug efficacy, or increased drug toxicity

**POTENTIAL HARMS**

Not stated

**CONTRAINDICATIONS****CONTRAINDICATIONS**

Enteral nutrition is contraindicated in a patient with significant hemodynamic compromise.

**QUALIFYING STATEMENTS****QUALIFYING STATEMENTS**

The American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Enteral Nutrition Practice Recommendations are based upon general conclusions of health

professionals who, in developing such recommendations, have balanced potential benefits to be derived from a particular mode of providing enteral nutrition with known associated risks of this therapy. The underlying judgment regarding the propriety of any specific practice recommendation or procedure shall be made by the attending health professional in light of all the circumstances presented by the individual patient and the needs and resources particular to the locality. These recommendations are not a substitute for the exercise of such judgment by the health professional, but rather are a tool to be used by the health professional in the exercise of such judgment. Use of this document is voluntary and should not be deemed inclusive of all proper methods of care or exclusive of methods of care reasonably directed toward obtaining the same result.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

### IMPLEMENTATION TOOLS

Chart Documentation/Checklists/Forms  
Slide Presentation  
Staff Training/Competency Material  
Wall Poster

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

End of Life Care  
Getting Better  
Living with Illness

### IOM DOMAIN

Effectiveness  
Patient-centeredness  
Safety

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

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## **ADAPTATION**

Not applicable: The guideline was not adapted from another source.

## **DATE RELEASED**

2009 Jan

## **GUIDELINE DEVELOPER(S)**

American Society for Parenteral and Enteral Nutrition - Professional Association

## **SOURCE(S) OF FUNDING**

American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.)

## **GUIDELINE COMMITTEE**

The Enteral Nutrition Practice Recommendations Task Force

## **COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE**

*Task Force Members:* Robin Bankhead, CRNP, MS, CNSN, *Chair*; Joseph Boullata, PharmD, BCNSP; Susan Brantley, MS, RD, LDN, CNSD; Mark Corkins, MD, CNSP; Peggi Guenter, PhD, RN, CNSN; Joseph Krenitsky, MS, RD; Beth Lyman, RN, MSN; Norma A. Metheny, PhD, RN, FAAN; Charles Mueller, PhD, RD, CNSD; Sandra Robbins, RD, CSP, LD; Jacqueline Wessel, MEd, RD, CSP, CNSD, CLE

## **FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

Jacqueline Wessell is on the Abbot Nutrition Speakers Bureau. No other potential conflicts were reported.

## **ENDORSER(S)**

American Dietetic Association - Professional Association  
American Society of Health-System Pharmacists - Professional Association  
Institute for Safe Medication Practices - Professional Association

## **GUIDELINE STATUS**

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## **GUIDELINE AVAILABILITY**

Electronic copies: Available from the [American Society for Parenteral & Enteral Nutrition \(A.S.P.E.N.\) Web site](#).



Print copies: Available in hardcopy from A.S.P.E.N. Telephone: 1-800-727-4567.

## **AVAILABILITY OF COMPANION DOCUMENTS**

The following are available:

- Be A.L.E.R.T. and Be A.W.A.R.E. Enteral Safety Campaign Posters. Available from the [American Society for Parenteral and Enteral Nutrition \(A.S.P.E.N.\) Web site](#)
- A CD-ROM tutorial: writing parenteral nutrition (PN) orders. Available from the [A.S.P.E.N. Web site](#).
- Slide teleseminars are available to members for purchase from the [A.S.P.E.N. Web site](#).

In addition, the following forms are available in the [original guideline document](#):

- Adult Enteral Nutrition Order Form
- Pediatric Enteral Nutrition Order Form
- Standard Enteral Nutrition Label Template (Adult Patient)
- Standard Human Breast Milk Label Template (Infant Patient)
- Human Breast Milk Storage Label

## **PATIENT RESOURCES**

None available

## **NGC STATUS**

This NGC summary was completed by ECRI Institute on February 5, 2010. The information was verified by the guideline developer on March 15, 2010.

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